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1 We Claim:

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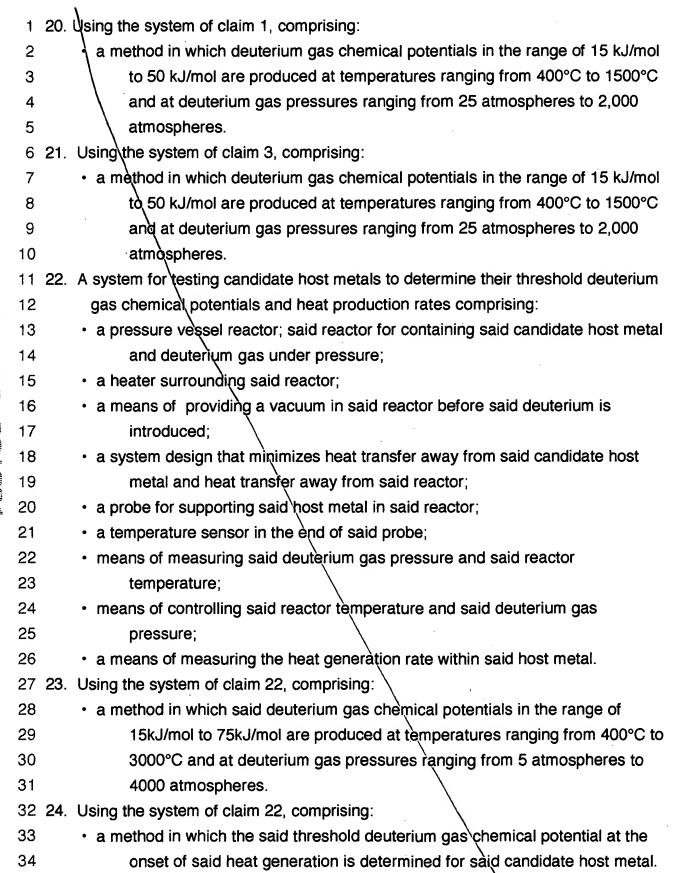
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- 3 1. A\system for generating solid state deuterium fusion heat at elevated system free 4 energy states, corresponding to high deuterium chemical potentials, comprising:
 - a pressure vessel reactor; said reactor having a void space; said void space containing a host metal and deuterium gas; said deuterium gas at elevated pressure within said reactor void space and dissolved in said host metal;
 - a means of providing a vacuum in said reactor before said deuterium is introduced;
 - means of controlling said reactor's temperature and said deuterium gas pressure;
 - means of transferring the generated heat to a useful load.
- 14 3. The system of in claim 1, comprising:
 - a means of permanently sealing said pressure vessel after introducing said deuterium.
- 17 4. The system of claim 3, comprising:
 - inert filler material inside said pressure vessel to reduce said void space; said reduction in void space enhancing the deuterium gas pressure increase as the reactor temperature is increased.
- 21 5. The system of claim 1, wherein said host metal is palladium.
- 22 6. The system of claim 1, wherein\said host metal is titanium.
- 23 7. The system of claim 1, wherein said host metal is nickel.
- 24 8. The system of claim 1, wherein said host metal is zirconium.
- 25 9. The system of claim 1, wherein said host metal is vanadium.
- 26 10. The system of claim 1, wherein said host metal is thorium.
- 27 11. The system of claim 1, wherein said host metal is lanthanum.
- 28 12. The system of claim 1, wherein said host metal is praseodymium.
- 29 13. The system of claim 1, wherein said host metal is tantalum.
- 30 14. The system of claim 1, wherein said host metal is uranium.
- 31 15. The system of claim 1, wherein said host metal is hafnium.
- 32 16. The system of claim 1, wherein said host metal is cerium.
- 33 18. The system of claim 1, wherein said host metal is in a powdered form.
- 34 19. The system of claim 1, wherein said host metal is in a solid form.



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